Unit 5

# Atlantic Highly Migratory Pelagic Fisheries

## Introduction

Oceanic pelagics are highly migratory species that include swordfish, bluefin tuna, yellowfin tuna, bigeye tuna, albacore, skipjack tuna, blue and white marlin, sailfish, longbill spearfish, and others. In the Atlantic Ocean, swordfish and bluefin tuna have long provided important fisheries, while in recent years yellowfin tuna and bigeye tuna have increased in importance to U.S. fishermen. Many recreational anglers target yellowfin and bluefin tuna, blue marlin, white marlin, and sailfish in U.S. waters and occasionally longbill spearfish. Commercial fishing for the latter four billfish species is now banned in U.S. waters; however, they are incidentally caught in tuna and swordfish longline fisheries.

Since Atlantic oceanic pelagics migrate widely and are harvested over broad oceanic areas by U.S. and foreign fishermen, both national and international management are necessary. In all cases, stock assessments are conducted using aggregate data, and provide the bases for regulations. U.S. fleets fish in the northwestern Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. These fleets are regulated under the Magnuson Fishery Conservation and Management Act (MFCMA) and the Atlantic Tunas Convention Act (ATCA), which provides authority to implement international agreements reached by the International Commission for the Conservation of Atlantic Tunas (ICCAT). U.S. fishery management plans have been developed for swordfish, blue marlin, white marlin, sailfish, and spearfish under the MFCMA. Management of Atlantic tunas and swordfish has been based largely on ICCAT recommendations, implemented via regulatory articles under ATCA. The Commission has set and allocated bluefin tuna quotas by country since 1982. The U.S. set domestic swordfish quotas beginning in 1991, but since 1995, country-specific swordfish quotas have been specified by the Commission.

## Species and Status

From the early-1960s through 1977, U.S. fishermen caught an average of about 5,000 t per year (2,000-12,000 t/year) of oceanic pelagics (Fig. 5-1). Since 1978, U.S. fishermen have caught 8,000 t or more per year, and during 1991-93 they averaged 14,600 t/year. The U.S. share of CPY for oceanic pelagics is 14,700 t/year, and LTPY to the U.S. fleet is estimated at 19,100 t/year (Table 5-1).

Since 1960, the top species by volume in the U.S. harvest has shifted from bluefin tuna to swordfish to yellowfin tuna (Fig. 5-1) as each species declined due to fishing pressure. In 1961-73, bluefin tuna represented 45-80% of the U.S. western Atlantic catch of large pelagics. But since 1977, the percentage has dropped to less than 10%, reflecting the decline in the bluefin tuna population, catch restrictions, and the increasing harvests of alternative species. During 1961-73, swordfish represented 5-20% of the U.S. catch, rose to 60% in 1982, but has since dropped to about 25%. During 1961-83, the percentage of yellowfin tuna in the U.S. North Atlantic catch was usually less than 10%, but that has since risen to 35-45%.

The U.S. dockside commercial ex-vessel revenue from these fishes soared from about $20

**Table 5-1. Atlantic Highly Migratory Pelagics**

*Productivity in metric tons and status of fisheries resources*

| Species / Area | Recent Average Yield (RAY)[2,3] | Current Potential Yield CPY[2] | Long-Term Potential Yield (LTPY)[2,3] | Fishery Utilization Level | Stock Level Relative to LTPY |
|---|---|---|---|---|---|
| Bigeye tuna (Atlantic) | 79,700 | Unknown | 67,500 | Full | Near |
| Albacore (N. Atlantic) | 31,700 | Unknown | 38,000 | Full | Near |
| Yellowfin tuna (W. Atlantic) | 35,000 | Unknown | 33,000 | Full | Near |
| Skipjack tuna (W. Atlantic) | 28,400 | Unknown | 33,000 | Full | Near |
| Swordfish (N. Atlantic) | 16,000 | 12,000 | 12,800 | Over | Below |
| Bluefin tuna (W. Atlantic) | 2,500 | 2,000 | 6,700 | Over | Far Below |
| Billfishes | | | | | |
| Blue marlin (N. Atlantic) | 1,183 | Unknown | 1,700 | Over | Below |
| White marlin (N. Atlantic) | 253 | Unknown | 600 | Over | Far Below |
| Sailfish (W. Atlantic) | 619 | Unknown | Unknown | Unknown | Unknown |
| Other tunas (Atlantic) | 51,600 | Unknown | Unknown | Unknown | Unknown |
| Total[1] | 246,955 | 242,455 | 245,519 | | |
| U.S. Subtotal Only | 14,600 | 14,700 | 19,100 | | |

[1] Total LTPY, CPY, and RAY under present fishing patterns by U.S. and foreign nationals.
[2] 1991-93 average.
[3] Individual LTPYs, CPYs, and RAYs are based on entire stock, regardless of harvesting nation.

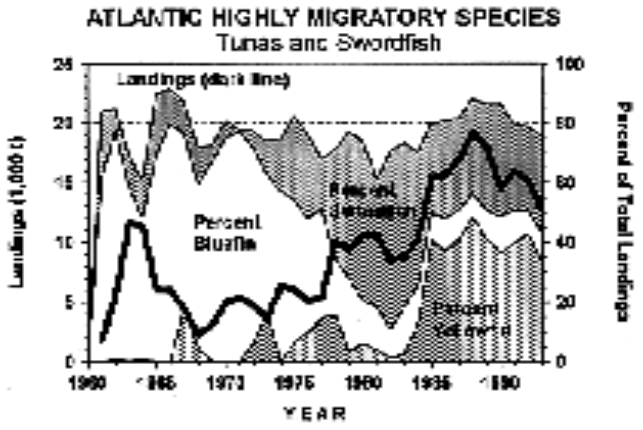



Fig. 5-1. U.S. landings of tunas, swordfish, marlins, and spearfish from the western North Atlantic Ocean, and the percentage of primary species.

**U.S. Yellowfin Tuna Landings (t)**

| | |
|---|---|
| 1992 | 6,500 |
| 1993 | 4,300 |

**U.S. Bluefin Tuna Landings (t)**

| | |
|---|---|
| 1992 | 1,200 |
| 1993 | 1,300 |

**U.S. Swordfish Landings (t)**

| | |
|---|---|
| 1992 | 4,200 |
| 1993 | 4,200 |

million (early-1980s) to nearly $100 million in 1988. The average annual commercial dockside value has remained at about this level since.

The value of the recreational fisheries for highly migratory species has not been estimated for all species; however, preliminary estimates indicate that they are highly valued.

Angler harvests of large pelagic fishes are estimated from dockside and telephone surveys. The average annual catch by recreational anglers for 1992-93 is estimated conservatively at 2,600 t. Fishing tournament surveys indicate a substantial increase in billfish fishing since 1972, although there are no precise data on these recreational anglers. Billfish tournament growth in some southern states indicates a fivefold to tenfold increase in this fishery since 1972. Although the practice of tagging and releasing of large pelagics has grown in recent years, more data are needed to quantify the recreational fishery trends for these fishes in the U.S. Atlantic and Gulf of Mexico waters.

There are a few Atlantic large pelagic species that appear to be underutilized and several that are overutilized. Bycatch of blue and white marlin by domestic and foreign fleets directing effort at other species has resulted in overharvesting of these stocks. Fishing mortality rates of swordfish have been excessive in recent years, prompting the development of international agreements to substantially reduce catches beginning in 1991. Harvests since July 1991 are consistent with ICCAT recommendations designed to reduce the risk of further declines. Western Atlantic bluefin tuna have been overharvested to the point of being severely depleted, and as a result the harvest of this species has been restricted since 1982. In spite of restrictions, there has been no apparent increase in adult numbers; however, the most recent ICCAT assessment indicates that current quotas may result in stock rebuilding in the future.

## Issues

### Transboundary stocks

Regulation of species that migrate across international boundaries is difficult. Domestic regulation without international agreements inherently is limited, but international agreements can be difficult to achieve. The latter is particularly true if the primary fishing nations cannot agree on fishing and conservation objectives, or do not abide by agreements once they are adopted. An additional problem is that not all fishing nations are members of ICCAT. The recent UN agreement on straddling fish stocks and highly migratory fish stocks may help to resolve these problems.

### Bycatch and Multispecies Interactions

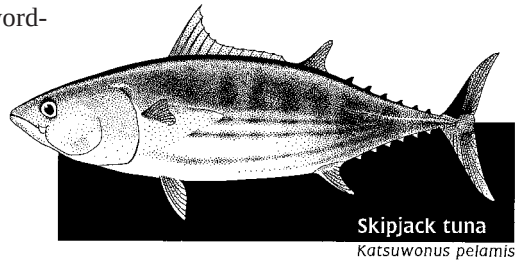
Marlin and sailfish bycatch in tuna and swordfish fisheries are a major concern, especially as commercial fisheries encounter concentrations of billfishes important to recreational anglers. Expansion of the U.S. longline fishery for Gulf of Mexico yellowfin tuna and Spanish longline fishing in the tropical eastern Atlantic have heightened concern for distressed Atlantic tunas, swordfish, and the billfishes sought by recreational anglers.

### Domestic Management

The number of permits for large pelagics has been increasing substantially, concurrent with declines in stock size, partly as a result of spillover from other fisheries where limited access is being implemented.

## PROGRESS

In recent years scientists from the U.S. and several other nations have made substantial progress towards improving our understanding of the biological basis for managing Atlantic highly migratory fisheries. Analyses of the genetic structure of Atlantic and Mediterranean swordfish have been completed and have corroborated some of the stock structure assumptions made by ICCAT. Genetic studies of other large pelagic species and bluefin tuna in particular are underway. Additional studies of bluefin tuna stock structure using various tagging methods and biological markers are in various stages of planning and implementation. Several years of research on the growth and reproductive biology of male and female swordfish is being used to increase the understanding of the effect of fishing on the north Atlantic and Mediterranean management units. At recent ICCAT meetings (1994 and 1995), several recommendations and resolutions have been adopted that, if fully implemented, will result in substantial progress in conserving stocks and achieving the following management objectives: 1) resolutions to adopt recovery plans and rebuilding strategies for bluefin tuna and swordfish, 2) establishment of country-specific quotas for swordfish, 3) adoption of measures facilitating the monitoring of catch by both member and non-member countries, and the use of trade measures for non-member nations that fish in a manner that diminishes the effectiveness of ICCAT management measures, and 4) a recommendation to establish the first eastern Atlantic country-specific bluefin tuna quota (for France only).


Skipjack tuna
*Katsuwonus pelamis*

At the domestic level, discussions on procedures to establish limited access for some large pelagics are currently well underway. ❑